# MVME8100 Series

## High Performance Power VME64x/VXS board

Embedded Computing for Business-Critical Continuity™

### Key Features

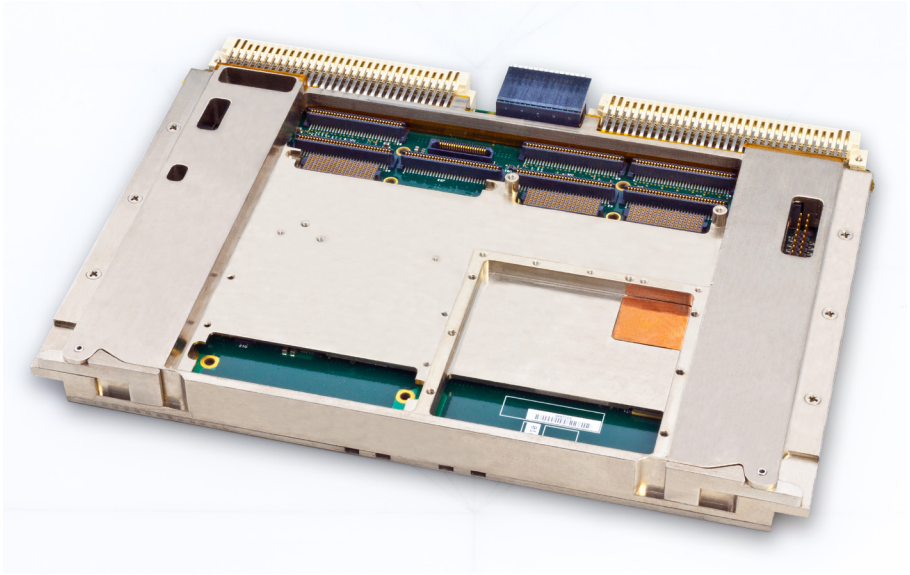
- Freescale QorIQ P5020 1.8/2.0GHz
- Up to 8GB DDR3-1333MHz ECC Memory
- 512KB FRAM
- 2 PMC/XMC sites
- Embedded NAND Flash (8GB eMMC)
- Optional on board 2.5” SATA SSD
- 2x4 PCIe or 2x4 SRIO connectivity to VXS backplane P0
- Up to 3 USB 2.0 ports
- Up to 5 Ethernet ports
- Up to 5 Serial ports
- 4 GPIO
- Extended Temperature and Conduction Cooled variants

The MVME8100 is a high performance 6U VME/VXS SBC featuring the new Freescale P5020 QorIQ processor supporting high speed DDR3-1333MHz with ECC. It offers expanded IO and memory features with PCIe and SRIO fabric connectivity and multiple USB, Serial and Ethernet ports. Memory includes up to 8GB DDR3, 512JK FRAM non volatile memory, and 8GB eMMC NAND Flash.

The MVME8100 is offered in commercial and fully rugged variants for extreme environments with extended shock, vibration, temperatures and conduction cooling. It is designed for a range of high end industrial control such as SPE and photo lithography and C4ISR, including Radar/Sonar. It will provide technology insertion to prolong current programs while providing more computing performance and data throughput.

The MVME8100 supports a full range of BSPs including Linux, Wind River VxWorks, and Green Hills Integrity.

**Preliminary**



RoHS 6/6 COMPLIANT

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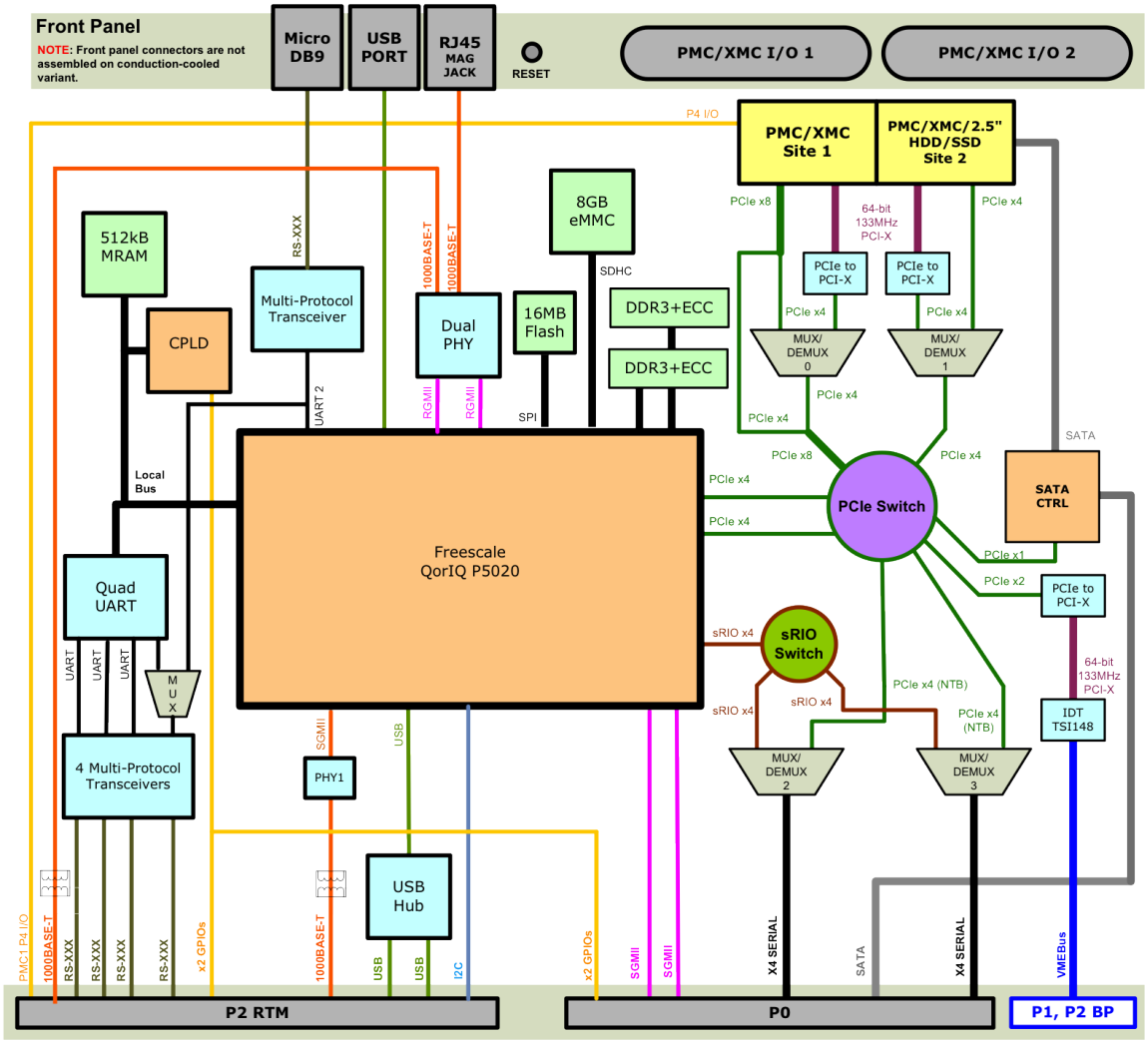
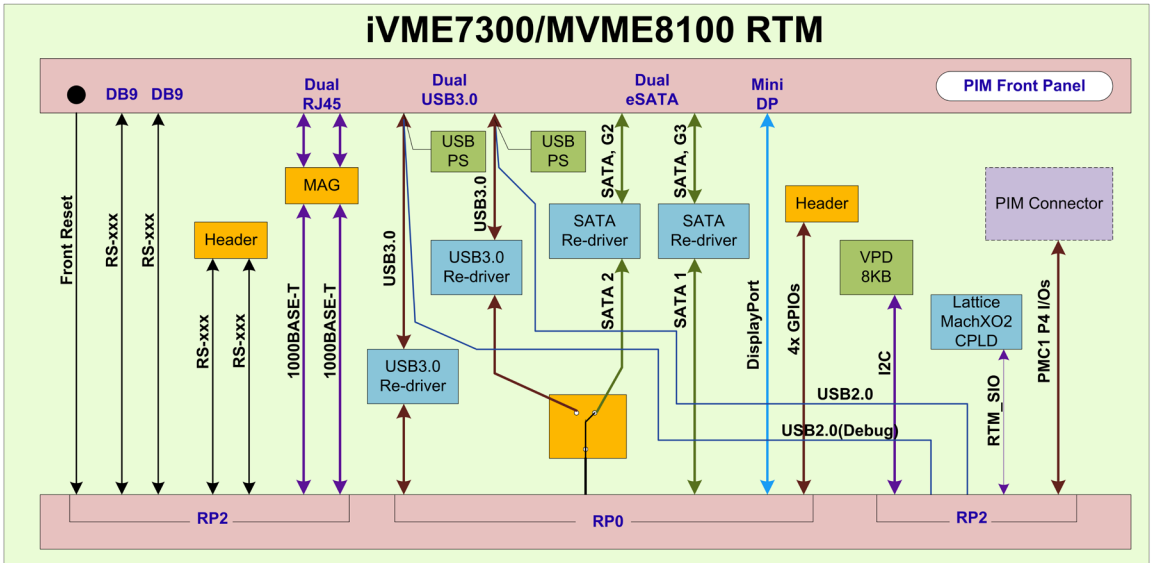
## MVME8100 Block Diagram



## Hardware Specifications

### PROCESSOR

- Freescale QorIQ P5020 in commercial and extended temperature
- 1.8GHz: 27W (P5020) Conduction Cooled
- 2.0GHz: 28W (P5020) Air Cooled

### MEMORY

- Up to 8GB of 64 bit DDR3-1333 ECC SDRAM soldered down
- 16 MB SPI ROM for boot code (in 1+1 redundant banks/devices)
- 512kB FRAM/MRAM for data storage
- 8GB NAND Flash with SD/MMC interface

### MANAGEMENT

- Boot bank/device selection
- Control of module reset and back-end power

### BACKPLANE I/O

- P0
  - 2 USB port
  - 2 SERDES GigE (VITA 41.6) (dedicated)
  - Up to 2 4x SRIO links (VITA 41.2)
  - Up to 2 x4 PCI-Express links (VITA 41.4); root or end-point
  - 1 SATA port
  - 4 GPIO
- P1
  - VME64x & 2eSST
- P2
  - VME64x & 2eSST
  - 3 or 4 RS232/422/485
    - Console port optional: routed to FP in air-cooled, P2 in conduction-cooled
  - Up to 3 Copper 10/100/1000BaseT Ethernet (dedicated)
    - User configurable 2 to front, 1 to rear or 1 to front and 2 to rear in ENP1
    - Two to RTM in ENP4

### OTHER FEATURES

- Real Time Clock with battery backup
- Real time counters
- Watchdog

### EXPANSION MODULE

- 2 PMC/XMC slots (PCI-X/x8 PCI-e)
- Alternatively, a 2.5" SATA HDD or SSD drive may be bolted directly to the MVME8100 board in place of PMC1

### FRONT PANEL CONNECTIVITY

- 2 GigE (RJ45) (dedicated 10/100/1000Base-T)
- 1 micro DB9 (console)
- 1 USB2.0 Type A powered
- 2 PMC/XMC

### REAR TRANSITION MODULE

- New RTM:
  - 2 P0 USB 2.0 to powered Type A on FP
  - 2 P2 Serial to RJ45 or mini DB9 on FP
    - One connector switchable; console or COMx
  - Remaining P2 serial ports to planar headers
  - 2 P2 GigE to RJ45 on FP
  - PMC1 to PIM
  - 4 GPIO to planar header
  - Reset switch for use with conduction-cooled front-board
  - P0 SATA to eSATA or SATA connector on FP
- Quad UART and dual GigE to be compatible with MVME7216E RTM
  - Quad P2 Serial and dual P2 GigE to be compatible with MVME7216E RTM
    - Console port inactive with air-cooled front-board

## Software and Firmware Specifications

### BOOT

- UBoot binary and source code. UBoot has been specified in place of MOTload because MOTload does not support graphics

### BOARD SUPPORT PACKAGES

- Wind River VxWorks
- Linux
- Green Hills Integrity
- Hypervisor

## Compliance and Certification Information

Environmental Compliance Standards
ENP1 and ENP4 available upon release

### ENVIRONMENTAL

| Ruggedization Level3 | ENP1 | ENP2 | ENP3 | ENP4 |
|---|---|---|---|---|
| **Cooling Method:** | Forced Air | Forced Air | Conduction | Conduction |
| **Operating Temperature:** | 0 °C to +55 °C | –40 °C to +71 °C | –40 °C to +71 °C | –40 °C to +85 °C |
| **Storage Temperature:** | –40 °C to +85 °C | –50 °C to +100 °C | –50 °C to +100 °C | –50 °C to +125 °C |
| **Vibration Sine: (10min/axis)** | 1G, 5 - 200 Hz | 5G, 15 to 2000Hz | 10G, 15 to 2000Hz | 10G, 15 to 2000Hz |
| **Vibration Random: (1hr/axis)** | .01$g^2$/Hz, 15 to 2000Hz | .04$g^2$/Hz, 15 to 2000Hz (8GRMS)[1] | 0.1$g^2$/Hz, 15 to 2000Hz (12GRMS) [2] | 0.1$g^2$/Hz, 15 to 2000Hz (12GRMS)[2] |
| **Shock:** | 20g/11mS | 30g/11mS | 40g/11mS | 40g/11mS |
| **Humidity:** | to 95% RH | to 100% RH | to 100% RH | to 100% RH |
| **Conformal Coating:** | No | Option (Acrylic) | Option (Acrylic) | Option (Acrylic) |

Note 1: Flat 15-1000Hz, -6db/octave 1000Hz – 2000Hz [MIL-STD 810F Figure 514.5C-17]

Note 2: +3db/octave 15-300Hz, Flat .1g2 300-1000Hz, -6db/octave 1000Hz – 2000Hz [MIL-STD 810F Figure 514.5C-8]

Note 3: Component and/or assembly screening shall be employed to satisfy feature/functional req (where feasible) when components are not available that meet Ruggedization level req's.

### EMC COMPLIANCE STANDARDS

- Industry standard requirements: (FCC, VCCI, MIC, AS/NZ)

### SAFETY STANDARDS

- Industry standard requirements (UL, CSA, Ctick)

### VITA STANDARDS

- VME64x
- VITA 1.5 2eSST
- VITA 39 XMC
- VITA 41.0, 41.2, 41.4, 41.6 VXS

| Code Name | Description |
|---|---|
| MVME8100-202200401S | P5020 2.0GHz, 4GB DDR3, 2PMC/XMC SCANBE ENP1 |
| MVME8100-202200401E | P5020 2.0GHz, 4GB DDR3, 2PMC/XMC IEEE ENP1 |
| MVME8100-202180404 | P5020 1.80GHz, 4GB DDR3, 2PMC/XMC ENP4 |
| | |
| VXS1-RTM1 | RTM for MVME8100 and IVME7300 |
| VME-64GBSSDKIT | SSD and mounting kit |
| VME-HDMNTKIT | Mounting Kit |

*Please contact your sales representative for additional processor and memory variants.

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